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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,274	01/26/2004	Motoyasu Terao	ASAM.0100	6485

7590 12/28/2006  
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EXAMINER
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GUPTA, PARUL H

ART UNIT	PAPER NUMBER
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2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/763,274

Applicant(s)

TERAO ET AL.

Examiner

Parul Gupta

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-14 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Claims 1-14 are pending for examination as interpreted by the examiner. The IDS filed on 1/26/04 was considered.

#### ***Drawings***

2. The drawings are objected to because "wave" is misspelled in element 3-6 of figure 3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Specification***

3. The disclosure is objected to because of the following informalities: minor typographical errors such as the word "used" instead of "using" in the last sentence of paragraph 0006, the word "At" instead of "As" in paragraph 0012, and the word "form" in the first sentence of paragraph 0018. Appropriate correction is required.

#### ***Claim Objections***

4. Claim 14 is objected to because of the following informalities: "material mixed an electroluminescent" is grammatically improper. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 7-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Green, US Patent 4,842,381.

Regarding claim 7, Green discloses an information recording method using an information recording medium having at least a first layer containing an electro-chromic material (column 3, lines 7-22), sandwiched by electrode layers (elements 2 and 7 of the figure) applying a voltage to said first layer to color said first layer (column 4, lines 1-4), and a second layer containing an electro-chromic material sandwiched by electrode layers provided on the light incident side with respect to said first layer (column 3, lines 33-68), comprising the steps of: applying a voltage to said electrode layers (column 4, lines 1-4); irradiating a first optical spot onto said first layer (column 4, lines 13-31); increasing speed of a coloring reaction of said second layer by irradiating said first optical spot onto said first layer (column 3, lines 33-36 explain that the electrically conducting coating is made of the same material of indium tin oxide as the poly-thiophene derivative organic material that is used to speed up the process as given in paragraph 0044 of the application); and irradiating said second optical spot onto said second layer to record information thereon after irradiating said first optical spot ("reflecting hole") onto said first layer (column 4, lines 13-31). Heating different layers in local areas performs the same function of irradiating optical spots on different layers. Since the laser must heat one layer before the next layer is affected, both layers are not simultaneously heated.

Regarding claim 8, Green discloses an information recording method using an information recording medium having at least a first layer containing an electro-chromic material (column 3, lines 7-22), sandwiched by electrode layers (elements 2 and 7 of the figure) applying a voltage to said first layer to color said first layer (column 4, lines 1-4), and a second layer containing an electro-chromic material sandwiched by electrode layers located on a side opposite to a light incident side with respect

Art Unit: 2627

to said first layer (column 3, lines 33-68), comprising the steps of: applying a voltage to said electrode layer (column 4, lines 1-4); irradiating a first optical spot onto said first layer (column 4, lines 13-31); increasing speed of a de-coloring reaction of said second layer by irradiating said first optical spot onto said first layer (column 3, lines 33-36 explain that the electrically conducting coating is made of indium tin oxide, which is an example of the poly-thiophene derivative organic material that is used to speed up the process as given in paragraph 0044 of the application); and irradiating a second optical spot onto said second layer after irradiating said first optical spot ("reflecting hole") onto said first layer (column 4, lines 13-31). Heating different layers in local areas performs the same function of irradiating optical spots on different layers. Since the laser must heat one layer before the next layer is affected, both layers are not simultaneously heated.

Regarding claim 9, Green discloses an information recording medium, comprising: a first layer containing an electro-chromic material (column 3, lines 7-22) sandwiched by; electrode layers applying a voltage to said first layer to color said first layer (column 4, lines 1-4); and a layer for increasing speed of one of a coloring operation and a de-coloring operation in response to one of an light irradiation and a temperature (column 3, lines 33-36 explain that the electrically conducting coating is made of indium tin oxide, which is an example of the poly-thiophene derivative organic material that is used to speed up the process as given in paragraph 0044 of the application).

Regarding claim 10, Green discloses an information recording medium as claimed in claim 9, further comprising a layer (element 5 of the figure) non-recorded information thereon but colorable by applying thereto a voltage. The given layer is the same electrolyte conducting material that is merely there to conduct, but is still an alternative to electro-chromic material as given in element 7 of figure 2 of the application.

Regarding claim 11, Green discloses an information recording medium as claimed in claim 9, further comprising a phase change recording layer provided between said first layer and one of said electrode layers (column 3, lines 33-68).

Regarding claim 12, Green discloses an information recording medium as claimed in claim 9, further comprising a photo-conductor layer provided between said first layer and one of said electrode layers (column 3, lines 33-36 explain the electrically conducting coating).

Regarding claim 13, Green discloses an information recording medium as claimed in claim 9, wherein said electro-chromic layer includes a poly-thiophene derivative organic material (column 3, lines 33-36 explain that the electrically conducting coating is made of indium tin oxide, which is an example of the poly-thiophene derivative organic material that is used to speed up the process as given in paragraph 0044 of the application).

Regarding claim 14, Green discloses an information recording medium as claimed in claim 9, wherein said first layer includes a material mixed an electroluminescent material with a photo-chromic material (column 3, lines 7-22 and lines 33-68 explains how the given layers are created to change color due to light and are sandwiched between electrodes).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Green in view of Marquardt, Jr. et al., US Patent 6,160,787.

Regarding claim 1, Green discloses an information recording apparatus (shown in figure) for recording information by irradiating light onto a multilayer information recording medium, the multilayer information recording medium having at least a first layer containing an electro-chromic material (column 3, lines 7-22), sandwiched by electrode layers (2 and 7) applying a voltage to said first layer to color said first layer; comprising: means for applying the voltage to said first layer (done by elements 11

and 12 as explained in column 4, lines 1-4); first optical irradiating means (13) for irradiating a first optical spot onto said first layer. Green does not but Marquardt, Jr. et al. teaches in figure 2 that the two optical irradiating means are two separate lasers (with different wavelengths) in an array that irradiate two different layers. Column 2, lines 13-17 explains how the second light frequency is emitted only based on the response to the first light frequency. As the two are not simultaneously emitted, the second layer is irradiated only after irradiating the first layer. It would have been obvious to one of ordinary skill in the art at the time of the invention provide the system of Green with a stack and an additional light source as taught by Marquardt, Jr. et al. The motivation would be to increase the density of the medium by having an additional storage layer.

Regarding claim 2, Marquardt, Jr. et al. teaches an information recording apparatus wherein, both said first optical spot and said second optical spot correspond to substantially parallel laser beams (shown in figure 2 and explained in column 2, lines 49-50), and wherein both said first optical irradiating means and said second optical irradiating means constitute a plurality of light sources arrayed along a substantially same straight line (shown as parallel beams).

Regarding claim 3, Marquardt, Jr. et al. teaches an information recording apparatus as claimed in claim 2, further comprising means for positioning both said first optical spot and second optical spot on the same track or within number of 3 tracks (shown in figure 2).

Regarding claim 4, Marquardt, Jr. et al. teaches an information recording apparatus as claimed in claim 2, further comprising means for detecting one of a tracking error signal and a track-address signal (necessary to irradiate using appropriate beam as given in column 2, lines 49-67) by one of the beams by employing at least two laser beams irradiated from said plurality of light sources (shown as parallel beams in figure 2).

Regarding claim 6, Green discloses in column 4, lines 13-31, an information recording apparatus as claimed in claim 1, further comprising means for performing an auto-focusing operation

(light must be focused to "local areas") by irradiating said first optical spot (heating local areas to create a "reflecting hole") onto said first layer (4).

***Allowable Subject Matter***

7. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 5, the closest prior art of record is Green, which discloses an information recording apparatus as claimed in claim 1 wherein, said first optical irradiating means irradiates said first optical spot onto said first layer to speed up one of a coloring operation and de-coloring operation of said second layer. Column 3, lines 33-36 explain that the electrically conducting coating is made of indium tin oxide, which is an example of the polythiophene-derivative organic material that is used to speed up the process as given in paragraph 0044 of the application. However, Green does not disclose the given stacks of layers where the speeding up one of a coloring operation and de-coloring operation is done on separate stacks of layers.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent Publications 2005/0207314 and 2005/0276211 and US Patents 5,734,637 and 3,986,771 all teach the information recording apparatus and medium with the given multilayer structure with the voltage being applied to the electrode layers to color the electro-chromic layers. Sasa, JP 02004103210 teaches a similar method of using an array of light sources to irradiate the same spot of a recording medium in order to speed up the transfer rate of data, as given in the abstract.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parul Gupta whose telephone number is 571-272-5260. The examiner can normally be reached on Monday through Thursday, from 9:30 AM to 7 PM.



Art Unit: 2627

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Korzuch can be reached on 571-272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PHG  
11/28/06

  
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